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## THE DIPTERA OF BRITISH COLUMBIA.

(First Part.)

BY JAMES S. HINE, COLUMBUS, OHIO.

During the summers of 1901-2, while at the Minnesota Seaside Station on Vancouver Island, Professor Raymond C. Osburn collected a number of Diptera, and during these same seasons and the past summer Professor R. V. Harvey, of The Queen's School at Vancouver, British Columbia, collected in the same order. Since so little has been published on the Diptera of that province, we have thought that even a short paper on the Dipterological fauna would be of interest and probably of some value.

These gentlemen have very kindly turned over their material, with the exception of the Syrphidæ, with the request that I should make the determinations and publish the results. I have encountered more or less difficulty in making these determinations, but have been ably aided in some cases by Mr. D. W. Coquillett, of the U. S. National Museum. Besides a number of specimens still undetermined, four new species have been described from the material. Two of these are described in this paper, one, *Anthalia stigmatis*, was described by Coquillett in the Proceedings of the Entomological Society of Washington, V. 268, and I described the fine Crane-fly, *Pedicia magnifica*, in The Ohio Naturalist, III., 417.

I have not considered the Syrphidæ in this part of the paper. Professor Osburn paid special attention to collecting the members of this family, and has spent much time in studying them and comparing with types in the U. S. National Museum. It is his intention to follow with a second part and give full notes regarding the field observations taken on many of the species.

As the field-work for this paper was done by others, I have no extended notes to offer, but in working over the material some few things have suggested themselves.

The list given below includes a number of species that have been

taken in California, as well as a number that have been taken in Alaska. Some of the species are known to occur all along the coast from California to Alaska, and are thus proven to have a wider range than most species are supposed to have. *Pedicia obtusa* and *Tabanus Sonomensis* were described from California; I have identified them from British Columbia, and Coquillett reports them from among the material taken in Alaska by the Harriman Expedition. Other species in the list may be shown to have the same or even a much wider range.

Only two species of mosquitoes are included in the list, and we have two others not yet determined, but this does not indicate that there is a dearth of these insects in the region, for Dr. Dyar has recently published a paper in the Proceedings of the Entomological Society of Washington, in which he enumerates twenty species from British Columbia. This serves to show us that there is plenty of opportunity for entomological work in this interesting region, and that the most interesting results are obtained by taking a small group and thoroughly collecting the forms belonging to it.

The Tabanidæ of British Columbia, as well as from the western United States, are a perplexing lot, and I have spent much time working on them, sometimes with satisfactory results, sometimes otherwise. Excellent characters have been found for some of the species, but for others the distinguishing marks are not apparent as yet. It seems that some of the species are quite variable, and that there are more species described than can be differentiated. Nearly all the species of *Tabanus* belong to the sub-genus *Theriopectes*, only two of those received having the eyes nonpubescent. In California *Tabanus punctifer* and *agrotus* occur together, but although I have repeatedly received the latter from British Columbia I have never known of a record for the former.

The family Leptidæ is represented by a number of interesting forms. *Xylomyia parens*, Will., appears to be rather commonly met with. The two specimens before me were taken at Vancouver on June 21st and July 4th. The species looks something like some of the sawflies, and can easily be confounded with them by the inexperienced. The species of *Symphoromyia* are said to bite severely, and are therefore somewhat of an annoyance to the collector and to stock in that region.

I have been interested in studying *Rhynchocephalus Sackenii*, Will., for it is surely an interesting form, and represents a family not commonly met with in North America. I have seen only one specimen, and that

was taken at Vernon, which must be a splendid collecting region, if one can judge from the species taken there.

Fully as interesting as the last species is *Pterodontia misella*, O. S., taken at Wellington, July 6th. The original description of the species was written from a specimen taken in Oregon by Henry Edwards.

The family Tachinidæ is represented by numerous species, some of which are widely distributed, but a number are known only from that region. The presence of these flies is always welcomed, for we have learned of so much good accomplished by them that we suspect their mission is a beneficial one, and are willing to let them have their way, especially if we note in them a tendency to direct their attacks to any of the species that are known to be injurious. The following breeding records accompanied the specimens sent: *Panzeria ampelus*, Walker, reared from a chrysalis of *Clisiocampa* (?) *Americana*; *Frontina Frenchii*, Will., reared from *Telea polyphemus*; and *Bombyliomyia abrupta*, B. and B., reared from pupa of *Halisidota maculata*.

*Pyrellia aenea*, Zett., has not been reported from North America heretofore, but some specimens before me agree so well with the description of that species as given by Schiner that I am well satisfied to give them that name. The group of Muscids to which this species belongs is widely distributed in this country and in Europe, so it is not strange to find it here, but the detection of the presence of an introduced species is always attended with more or less interest.

It is interesting to note that the usual stock pests are present in British Columbia as well as in other parts of North America. *Simulium fulvum*, numerous species of mosquitoes, horse-flies, the bot fly, and species of the genus *Symphoromyia* are noted, and must be a consideration with reference to the stock interests of the province.

A number of species commonly known as scavengers are noted, and it seems that these are more numerous in individuals than is usually common in much of the western country.

*Euparyphus obliquus*, n. sp.—Female: Black, with yellow markings on head, thorax and abdomen. Face black, with an oblique yellow fascia on each side about midway between the vertex and the insertion of the antennæ. Antennæ black at each extremity, with the intervening parts rather light brown. Face black, with a triangular yellow spot on the anterior part of each cheek, and a very narrow whitish pollinose space along each eye, posterior orbits yellow, occiput shining black. Thorax

black, with yellow on each half, as follows : a narrow dorsal line from anterior border to beyond the suture, a large spot distinctly furcate before, above the base of the wing, an elongate triangular spot before the suture, a small humeral spot narrowly connected with a stripe, which reaches the base of the wing, and which is five or six times as wide posteriorly as where it joins the humeral spot, a rather large geminate spot below the base of the wing, and one or two small spots above the posterior coxa. Scutellum yellow, with the base narrowly shining black ; halteres yellow ; legs yellow, except the median part of each femur, which is black ; wings hyaline, stigma and principal veins yellow, third vein not furcate. Abdomen black, with yellow on each half, as follows : a narrow lateral margin connected with a small spot on second segment, an oblique fascia on each of the third and fourth segments, and the rather broad apex of the fifth segment ; venter black, with irregular yellow patches on the middle of the second and third segments. Length, 6 millimeters.

Habitat : Taken at Vernon, British Columbia, August 8th, 1902.

On account of the oblique yellow markings on the front, the name *obliquus* is given this species.

We hesitated at first to describe this species from a single specimen, but as we have studied practically all the types of the species of the genus without identifying the specimen, have concluded to name it.

*Anthrax Harveyi*, n. sp.—Ground colour deep black, clothed above with light yellow and golden yellow pile, beneath with black pile. Head black, face and front clothed with black pile, proboscis projecting slightly beyond the margin of the mouth. Thorax clothed on the dorsum and sides with rather long, light yellow pile, on the sternum with black pile, legs black, with black hairs, and all the tibiae with distinct spines, wings hyaline except costal cells and basal areoles, which are black ; the branching of the second and third veins takes place almost opposite the small cross vein, and the common stock of these veins is narrowly margined with black almost to where they branch, halteres yellow, of nearly the same colour as the pile of the sides and dorsum of the thorax. Abdomen with the dorsum clothed with long and rather dense pile, that on first segment light yellow and on the remaining segments golden yellow, a few black hairs at the apex of the abdomen, venter entirely clothed with black hairs.

Total length 8–10 mm. The species seems to be related to *fulviana*, but besides being smaller differs in the colour of the vestiture of the body.

Habitat: Mount Cheam, near Agassiz, British Columbia.

Professor R. V. Harvey, who collected the specimens, and after whom the species is named, sends the following note: Mount Cheam is a peak in the Cascade Range, and rises abruptly from the west bank of the Frazer River opposite Agassiz station, on the Canadian Pacific, about 70 miles from the coast. It attains a height of 8,000 feet, but the spot where these specimens were obtained was some 1,500 feet lower, in a grassy valley clothed in brake-fern and various flowering plants. The species appeared to haunt a clump of low bushes of a species of mountain ash, whose flowers seemed to attract insects in some numbers. Most of the specimens were taken while resting on bare stony patches among the fern adjoining the clump mentioned.

If there are those who have aided me in any way in getting the material for this paper together, and if I have not given them credit, I wish to thank them for their part in the matter. I say this because I suspect that some of the specimens have been collected by parties not mentioned, but I have used the data at hand and given the facts so far as I am in a position to know them.

The following is a list of the species identified, and the localities where they were taken:

- Simulium fulvum*, Coq. Pt. Renfrew, Glacier.
- Bibio nigripilosus*, Lw. Victoria, Glacier.
- Culex incidens*, Thomp. Pt. Renfrew, Vancouver.
- Culex varipalus*, Coq. Pt. Renfrew.
- Pedicia obtusa*, O. S. Pt. Renfrew.
- Pedicia magnifica*, Hine. Pt. Renfrew.
- Xylomyia parens*, Will. Victoria.
- Xylophagus decorus*, Will. Wellington.
- Xylophagus rufipes*, Lw. Pt. Renfrew.
- Sargus decorus*, Say. Vancouver, Victoria.
- Sargus viridis*, Say. Vernon, Victoria.
- Euparyphus obliquus*, Hine. Vernon.
- Odontomyia Hoodiana*, Bigot. Vancouver.
- Odontomyia pubescens*, Day. Vernon.
- Stratiomyia barbata*, Lw. Victoria, Vernon.
- Stratiomyia laticeps*, Lw. Vernon.
- Pangonia fera*, Will. Agassiz.
- Chrysops proclivis*, O. S. Victoria.

- Chrysops noctifer*, O. S. Vancouver, Goldstream.  
*Silvius gigantulus*, Lw. Pt. Renfrew.  
*Tabanus ægrotus*, O. S. Victoria, Wellington.  
*Tabanus fratellus*, Will. Victoria, Pt. Renfrew.  
*Tabanus sequax*, Will. Vancouver, Glacier.  
*Tabanus Sonomensis*, O. S. Pt. Renfrew, Vancouver.  
*Tabanus comastes*, Will. Agassiz.  
*Tabanus septentrionalis*, Lw. Vancouver.  
*Triptotrichia discolor*, Lw. Wellington.  
*Leptis dimidiata*, Lw. Vancouver, Pt. Renfrew.  
*Symphoromyia latipalpus*, Bigot. Victoria.  
*Symphoromyia Johnsoni*, Coq. Victoria, Glacier, Vancouver.  
*Dioctria albius*, Walk. Victoria.  
*Scleropogon modestus*, Lw. Victoria, Goldstream.  
*Scleropogon helvolus*, Lw. Victoria.  
*Pogonosoma dorsata*, Say. Victoria.  
*Cyrtopogon nebulosus*, O. S. Vancouver, Vernon.  
*Cyrtopogon aurifex*, O. S. Victoria.  
*Cyrtopogon montanus*, O. S. Vernon.  
*Cyrtopogon positivus*, O. S. Pt. Renfrew.  
*Laphria astur*, O. S. Victoria, Goldstream.  
*Laphria vultur*, O. S. Vancouver, Pt. Renfrew.  
*Rhynchocephalus Sackenii*, Will. Vernon.  
*Anthrax agrippina*, O. S. Victoria, Vancouver.  
*Anthrax seminigra*, Lw. Victoria.  
*Anthrax lateralis*, Say. Pt. Renfrew, Goldstream.  
*Anthrax sinuosa*, Wied. Pt. Renfrew, Victoria.  
*Anthrax Harveyi*, Hine. Agassiz.  
*Exoprosopa dorcadion*, O. S. Wellington.  
*Spogostylum cædipus*, Fabr. Victoria.  
*Spogostylum pauper*, Lw. Victoria.  
*Spogostylum melanopogon*, Bigot. Vancouver.  
*Aphæbantus hirsutus*, Coq. Goldstream.  
*Eclimus auratus*, Will. Victoria.  
*Bombylius major*, Linn. Victoria.  
*Bombylius lancifer*, O. S. Vernon.  
*Systæchus candidulus*, Lw. Victoria.  
*Thereva frontalis*, Say. Vancouver.



- Pterodontia misella*, O. S. Wellington.  
*Empis luctuosa*, Kirby. Wellington.  
*Empis virgata*, Coq. Victoria, Vancouver.  
*Empis poplitea*, Lw. Victoria.  
*Empis laniventris*, Esch. Glacier.  
*Anthalia stigmalis*, Coq. Pt. Renfrew.  
*Dolichopus occidentalis*, Ald. Vancouver.  
*Dolichopus plumosus*, Ald. Pt. Renfrew.  
*Hygroceleuthus crenatus*, O. S. Vancouver.  
*Hygroceleuthus ciliatus*, Ald. Pt. Renfrew.  
*Hercostomus procerus*, Wheeler. Pt. Renfrew.  
*Physocephala Burgescii*, Will. Glacier.  
*Myopa plebeia*, Will. Halzic.  
*Myopa clausa*, Lw. Vancouver.  
*Zodion fulvifrons*, Say. Pt. Renfrew.  
*Gastrophilus equi*, Fabr. Vancouver.  
*Gymnosoma fuliginosa*, R. D. Goldstream.  
*Alophora æneoventris*, Will. Vancouver.  
*Eulasiona Comstockii*, Towns. Pt. Renfrew.  
*Plagia Americana*, v. d. W. Pt. Renfrew.  
*Arphria ocypterata*, Towns. Victoria.  
*Ocyptera Carolinæ*, R. D. Vancouver.  
*Ocyptera dosiades*, Walker. Pt. Renfrew.  
*Dionæa nitoris*, Coq. Victoria, Vancouver.  
*Panzeria ampelus*, Walker. Vancouver.  
*Gymnochæta alcedo*, Lw. Vancouver.  
*Exorista blanda*, O. S. Vancouver.  
*Tachina robusta*, Towns. Victoria.  
*Blepharipeza adusta*, Lw. Victoria.  
*Paraphyto borealis*, Coq. Glacier.  
*Frontina Frenchii*, Will. Vancouver.  
*Gonia antennata*, Coq. Vernon.  
*Gonia capitata*, DeG. Vancouver.  
*Masicera chætoneura*, Coq. Glacier.  
*Peleteria tessellata*, Fabr. Agassiz.  
*Peleteria robusta*, Wied. Goldstream.  
*Echinomyia algens*, Wied. Vancouver, Victoria.

- Echinomyia infumata*, Bigot. Victoria.  
*Echinomyia decisa*, Walker. Glacier.  
*Epalpus bicolor*, Will. Vancouver.  
*Epalpus signifera*, Walker. Vancouver, Victoria.  
*Bombyliomyia abrupta*, B and B. Victoria.  
*Myiocera simplex*, Bigot. Victoria.  
*Sarcophaga sarraceniae*, Riley. Vancouver.  
*Calliphora erythrocephala*, Meig. Victoria.  
*Calliphora viridescens*, R. D. Pt. Renfrew, Glacier.  
*Lucilia Cæsar*, Linn. Vancouver.  
*Lucilia sericata*, Meig. Wellington.  
*Musca domestica*, Fabr. Victoria.  
*Pollenia rudis*, Fabr. Victoria.  
*Mesembrina Latreillei*, R. D. Vancouver, Agassiz.  
*Pyrellia cyanicolor*, Zett. Vancouver.  
*Pyrellia ænea*, Zett. Vancouver.  
*Pseudopyrellia cornicina*, Fabr. Vancouver.  
*Limnophora* alone, Walker. Vancouver, Pt. Renfrew.  
*Phaonia septentrionalis*, Stein. Glacier, Agassiz.  
*Hydrotæa dentipes*, Fabr. Pt. Renfrew.  
*Aricia serva*, Meig. Glacier.  
*Phorbia cinerella*, Fall. Field.  
*Hyetodesia varipes*, Coq. Victoria.  
*Mydæa signia*, Walker. Vancouver.  
*Scatophaga furcata*, Say. Victoria.  
*Scatophaga stercoraria*, Linn. Pt. Renfrew, Vancouver.  
*Neuroctena analis*, Fall. Victoria, Pt. Renfrew.  
*Tetanocera plebeja*, Lw. Field.  
*Edoparea glauca*, Coq. Pt. Renfrew, Vancouver.  
*Seoptera vibrans*, Linn. Vancouver.  
*Tephritis albiceps*, Pt. Renfrew.  
*Palloptera jucunda*, Lw. Vernon.  
*Sapromyza lupulina*, Fabr. Victoria, Pt. Renfrew.  
*Sepsis violacea*, Meig. Vancouver.  
*Borborus geniculatus*, Macq. Vancouver.



## SYNOPSIS OF BEES OF OREGON, WASHINGTON, BRITISH COLUMBIA AND VANCOUVER.

BY HENRY L. VIERECK, ASSISTED BY T. D. A. COCKERELL, E. S. G. TITUS,  
J. C. CRAWFORD, JR., AND M. H. SWENK.

This first guide to the bees of the "Great Northwest" is presented in the hope that it will encourage the collection and study of these interesting insects in a region which is only now beginning to yield its treasures in this department of science.

The species are, in the main, arranged from generalized to specialized types; the groups follow one another, as in the recently proposed scheme of Mr. Charles Robertson, whose papers on the classification of bees have appeared, with few exceptions, in this journal.

Prof. Cockerell's published work on Nomadidae has been drawn upon for the portion of this synopsis which relates to that family. Mr. E. S. G. Titus, Mr. J. C. Crawford and Mr. M. H. Swenk have contributed, or will contribute, respectively, the Megachilidae, Halictidae and Colletidae—to all I am greatly indebted. Those papers of Robertson that have not appeared in the CANADIAN ENTOMOLOGIST have been drawn upon for the generic synopsis in Bombidae and Andrenidae.

## PROSOPIDÆ, Prosopis, Fabr.

## Female.

8 mm. Entirely black; wings strongly brownish; dull, sculpture dense, disc of metathorax rugose; abdomen shining, second segment depressed about one-third, indistinctly in the middle..... *basalis*.

*Prosopis basalis*, Sm.—Brit. Mus. Cat. I., 23.

Vancouver. (Am. Ent. Soc. Phila.)

## Males.

Scape immaculate.

Superior extensions of the lateral face-marks distinctly separated from the eyes..... *citrinifrons*.

Superior extensions of the lateral face-marks contiguous with the eyes..... *divergens*.

Scape maculated.

Superior extensions of the lateral face-marks shaped like commas and abruptly separated from the eye margins; abdomen dull, wings brownish..... *Bakeri*.

Superior extensions of the lateral face-marks not shaped like commas nor abruptly separated from the eye margins; abdomen shining..... *Mesilla*.

*Prosopis citrinifrons*, Ckll., Psyche vii., Supp. p. 27.

Vancouver. (Am. Ent. Soc., Phila.) With the flagellum brown beneath.

*Prosopis divergens*, Ckll., Psyche vii., Supp. p. 29.

Oregon. (Am. Ent. Soc., Phila.) Differs from the description as follows: Face lemon-yellow, inclining to orange; marks on body and legs much the same; anterior tibiæ reddish (possibly coloured by cyanide); first segment of abdomen closely punctured; flagellum brown beneath; supraclypeal mark blunt, triangular; a dark spot on the yellow of the tubercles.

*Prosopis Bakeri*, Ckll., Psyche vii., Supp. p. 26.

Corvallis, Oregon, 25 May, 1898 (Cordley).

*Prosopis Mesilla*, Ckll., CAN. ENT., xxviii., p. 42.

Washington. (Am. Ent. Soc. Phila.) Enclosure of metathorax, rather coarsely striate.

#### COLLETIDÆ, Colletes, Latr.

By Myron H. Swenk, Lincoln, Nebr.

#### Females.

Mesothorax with black hairs; abdomen highly polished, base of segment 2 fasciate..... *fulgidus*, n. sp.

Mesothorax without black hairs.

Pubescence of head, pleura and legs black; no abdominal fasciæ..... *Pascoensis*.

Pubescence of head, pleura and legs not black; abdomen fasciate.

Pubescence of head and thoracic dorsum fulvous; 13 mm.

long..... *Kincaidii*.

Pubescence of head and thoracic dorsum yellowish-white;

10 mm. long..... *delodontus*.

#### Males.

Cheeks and tibiæ with black pubescence..... *Pascoensis*.

Cheeks and tibiæ with pale pubescence.

Pubescence of thoracic dorsum whitish, with a few brown

hairs..... *fulgidus*, n. sp.

Pubescence of thoracic dorsum fulvous or ochraceous, without dark hairs.

Larger, 10½ mm. long..... *Kincaidii*.

Smaller, 9 mm. long..... *simulans*.

*Colletes Pascoensis*, Ckll., Proc. Acad. Nat., Sci., Phil., 1898, p. 51.

Type locality: Pasco, Wash. (Ckll.)

*Colletes Kincaidii*, Ckll., Proc. Acad. Nat. Sci., Phil., 1898, p. 52.

Type locality: Olympia, Wash. (Ckll.)

*Colletes delodontus*, Vier., Trans. Am. Ent. Soc., xxix., p. 60.

One ♀, Pasco, Wash., May 25, 1896.

*Colletes simulans*, Cress., Proc. Bost. Soc. Nat. Hist., xii., p. 165.

Two ♂'s, Olympia, Wash., July 4, 1896.

*Colletes fulgidus*, n. sp.—♀. Length, 10 mm. Black, shining. Head broad, orbit extremities bluntly rounded. Clypeus flat, shining, very coarsely striately punctured, depressed before truncate apex, with short scattered, pale hairs. Middle of supraclypeal area shining, about impunctate. Front dull, with small crowded punctures, sparsely covered with short gray pubescence. Vertex not depressed, shining, very finely and rather closely punctured, with erect pale pubescence and a few black hairs intermixed. Cheeks punctured like vertex, the pubescence short and sparse. Malar space less than one-fourth width of mandible at base. Mandibles black, the notch not far from the spatulate, rufescent tip. Labrum shining with a deep, round median pit and lateral grooves. Antennæ black, the flagellum sometimes very obscurely brownish beneath, and its basal joint a shade longer than second.

Prothoracic spine short, but stout and sharp, triangular. Mesothorax very coarsely and deeply punctured, the punctures very close but rarely cancellate, on the polished disc well separated and few, on either side a longitudinal sub-impunctate line. Scutellum hardly punctured, except along posterior margin, postscutellum dull and finely roughened. Anterior margin of thorax with a rather dense fringe of erect hairs, whitish tinged with ochraceous and mixed with black, this passing along sides within tegulæ and covering postscutellum, where the black hairs are lacking. Space within this circle of pubescence almost bare, the hairs few, scattered, bristle-like and all black, a fringe of black hairs along posterior edge of scutellum. Superior face of metathorax rather poorly defined, but a decided rim beyond postscutellum, the sub-rectangular pits well formed, shining, scarcely wider medially, about twice as long as broad. Posterior face of metathorax shining, the lateral faces with sparse, long, white pubescence and very coarsely and irregularly punctured, forming a rough surface, the enclosure funnel-shaped, its bowl ridged laterally and with a median longitudinal groove, not so polished as the

smooth neck, which is twice as long as wide at base. Mesopleura shining, coarsely and closely punctured, except for a small, median, polished, impunctate space, the pubescence whitish. Tegulae shining, black to rufo-piceous. Wings hyaline, nervures very dark brown to blackish, stigma dark brown. Legs wholly black, claws and spurs ferruginous, thinly clothed with grayish-white pubescence, rufous fringes on inner apices of tarsal joints. Abdomen shining, first segment highly polished, its base almost impunctate and surrounded by a ruff of long, erect, pale hairs, which reaches down the sides, elsewhere with small, well-separated punctures, weakening toward a median longitudinal impunctate line and becoming finer and very dense on apical margin, second segment similar, but uniformly and more finely punctured, following segments duller, but still quite shiny, finely and closely punctured. Base of second segment depressed; and with a white pubescent fascia broadly interrupted medially, the apical margin of the first with lateral fasciae, of 2-5 with complete broad pure white fasciae, which are, however, not dense, but easily worn off, and not decidedly continued on the shining venter. Segments 3-6 with a few scattered, dark brown hairs.

♂.—Length 9 mm. Differing from ♀ as follows: Pubescence much paler and denser, that on clypeus long, dense and silvery, that on thorax long, erect and covering the whole surface, pale gray or grayish-white, with a very few dark brownish hairs intermixed, these most noticeable on scutellum; labrum with about four subequal striae; first joint of flagellum a shade shorter than second; malar space about one-half width of mandible at base; prothoracic spines smaller; apical tarsal joints inclining to ferruginous; abdomen shining, but lacking the high polish of the ♀, the whole of first segment with sparse, long, erect pale pubescence, no fascia on base of second segment, but a poorly-formed one at apex of first segment, and well-formed, though loose, fasciae on apices of 2-6.

Specimens examined: Type ♀, ♂, Big Horn Mts., Wyoming (L. Bruner); co-types, 2 ♀ ♀'s, Corvallis, Oregon, June 11, 1898; 2 ♀ ♀'s, Market Lake and St. Anthony, Idaho; 2 ♀ ♀'s, Colorado, Nos. 2277 and 2294. Apparently a mountain species of rather extended distribution.

From the other North American species having black hairs on the thorax above and a fascia on base of second abdominal segment in the ♀, this sex of *fulgidus* may very readily be distinguished as follows: From *compactus* by the pitted base of metathorax; from *distinctus* by the

densely-punctured and sparsely pubescent mesothorax ; from *Gilensis* by its much smaller size ; from *nudus* by the polished and more closely-punctured abdomen, and pale hairs on vertex ; from *bigelovia* by the clear wings ; and from *armatus* by its smaller size, darker flagellum and tegulae, and more shining abdomen and legs.

XYLOCOPIDÆ, *Xylocopa*.

Female. 17 mm.

Entirely black ; wings pale brown ; dorsum shining ; middle of dorsulum impunctate ; abdomen with the punctures irregularly distributed, at no place far apart . . . . . *orpifex*.

*Xylocopa orpifex*, Sm., Trans. Ent. Soc., Lond., 1874, p. 298.

Riddle, 4th July, and Corvallis, 10th Oct., 13th Dec., Oregon. (Cordley.)

## BOMBIDÆ.

Ocelli large ; ♀ with the ocelli below supraorbital line, in the narrowest part of the front, distance between lateral ocelli greater than the distance between the lateral ocellus and the eye. ♂ with the ocelli frontal, the lateral one less than its diameter from the eye, malar space much shorter than wide . . . . . *Bombias*.

Ocelli small ; ♀ with the ocelli near the supraorbital line, above the narrowest part of the front, the distance between lateral ocelli about equal to the distance between the lateral ocellus and the eye. ♂ with the ocelli vertical, the distance between the lateral ocelli and between them and the eye as in the ♀, malar space about as long as wide . . . . . *Bombus*.

## BOMBIAS, Robt.

Pubescence of head black, in the male pale ; dorsum of thorax, pleura, first dorsal segment entirely, second segment partly, with pale ochreous pubescence . . . . . *separatus*.

*Bombias separatus*, Cress., Proc. Ent. Soc., Phil., ii., p. 165. Taken at Corvallis, Oregon, by Prof. Cordley, as follows: ♀ ♀'s, 21st May, 1899 ; 1st June, 1898 ; 4th October, 1899. ♂ ♂'s, 24th April, 1899 ; 2nd and 20th September, 3rd October, 5th November, 1899.

## BOMBUS, Latr.

Pubescence of first three dorsal segments of abdomen pale . . . . . 1.

Pubescence of first three dorsal segments of abdomen various, at least one of the segments black, or partly black . . . . . 4.

1. Pale pubescence of abdomen ochreous.....2.  
Pale pubescence of abdomen at least partly reddish.....3.
  2. Dorsum of thorax entirely pale.....*Morrisonii*.  
Dorsum of thorax black in the centre.....*Nevadensis*.  
Dorsum of thorax with a black band.  
Face with black pubescence, ♀ with two apical segments  
black.....*Pennsylvanicus* (= *fervidus*).  
Face with pale pubescence, ♀ with the apical segment  
black.....*appositus*.
  3. Dorsulum not banded, pale and black hairs mixed.....*melanopygus*.  
Dorsulum banded; second and third segments of abdomen distinctly  
reddish.  
Scutellum entirely pale.....*ternarius*.  
Scutellum partly black.....*bifarius*.  
Third and fourth abdominal segments indistinctly  
reddish.....*Vancouverensis*.
  4. Apex of abdomen pale.....5.  
Apex of abdomen largely black.....6.
  5. First abdominal segment black.....*occidentalis*.  
First abdominal segment pale, or with some black.  
Last three segments pale yellowish.....*mixtuosus*.  
Last three segments pale white and yellow, or white and  
tawny.....*Oregonensis*.  
First abdominal segment with some black.  
Last three segments pale and black and brownish at  
apex.....*Putnamii*.  
First abdominal segment without black.....*Sitkensis*.
  6. First segment black.....*Californicus*.  
First segment pale.....*Edwardsii*.  
First segment black only at base.....*Americanorum*.
- Bombus Morrisonii*, Cress., Proc. Acad. Nat. Sci., Phil., 1878, p. 183.  
One ♀ (without data) received from Prof. Cordley.  
*Bombus Nevadensis*, Cress., Trans., Am. Ent. Soc., Phil., v., p. 102.  
Females, Condon, Oregon, 8th and 23rd July. (Cordley.)  
*Bombus Pennsylvanicus*, De Geer, = *fervidus*, Fabr.  
*B. (Apis) Pennsylvanicus*, De Geer, Mem. Hist. Insect. iii., 1773.  
p. 575.  
*B. (Apis) fervida*, Fabr., Supp. Entom. System., 1798, p. 274.



One ♀ 23rd July, 1899, ♂'s 23rd July, 1899, Condon, Oregon; ♂'s 26th July, 1897, 8th Sept., 1899. (Cordley.)

*Bombus appositus*, Cress., Proc. Acad. Nat. Sci., Phil., 1878, p. 183.

♀'s 11th June, 1897, September, 1899, Corvallis (Cordley), ♂'s 5th July, 1900, Hillsboro (Tulley), 13th July, 1900, Amity (Smith), 11th Aug., 1899, Corvallis (Cordley), Oregon.

*Bombus melanopygus*, Nyl. Notis. Saellsk. Faun. and Fl. Fenn. Forh. i., 1848, p. 236.

♀'s 4th May, 1897, 11th, 14th May, 1898, Corvallis, Oregon (Cordley.) Mt. Hood, Oregon; Vancouver (Am. Ent. Soc., Phil.).

*Bombus mixtuosus*, Ashm., Proc. Wash. Acad. Sci., iv., p. 128.

1st May, 1903, Vancouver, B. C. (Harvey.)

*Bombus Sitkensis*, Nyl., Notis. Saellsk. Faun. and Fl. Fenn. Forh. i., p. 235. 2nd June, 1902, Vancouver, B. C. (Harvey.)

*Bombus ternarius*, Say, Bost. Journ. Nat. Hist. i., p. 414.

♀'s, Condon, 14th July, 1900 (Tulley), Corvallis, 14th July, 1900 (Tulley), 14th Aug., 1900 (Tulley), Corvallis, Oregon.

*Bombus bifarius*, Cress., Proc. Acad. Nat. Sci., Phil., 1878, p. 185.

Washington, Vancouver, British Columbia. (Am. Ent. Soc., Phila.).

This is undoubtedly a variety of *ternarius*.

*Bombus Vancouverensis*, Cress., Proc. Acad. Nat. Sci., Phil., 1878, p. 187. Vancouver. (Am. Ent. Soc., Phila.)

*Bombus occidentalis*, Greene, Ann. Lyc. Nat. Hist., New York, vii., 1858, p. 12.

♀'s, Corvallis, 9th, 14th and 20th May, 1898; 4th May, 7th June, 1899, 1900; ♂'s, 11th May, 28th May, 1898 (Cordley.) Washington; Mt. Hood, Oregon; Vancouver. (Am. Ent. Soc., Phil.) Rated as a variety of *terricola* by Handlirsch.

*Bombus Oregonensis*, Cress., Proc. Acad. Nat. Sci., Phil., 1878, p. 185.

♀'s, 5th, 19th April, 3rd, 7th, 9th, 15th, 25th, 26th May, 1898; 30th April, 1899; ♂ 22nd April, 10th, 14th, 15th, 25th, 28th May, 2nd, 6th, 7th, 10th June, 1898; ♂'s, 1st May, 1899; 22nd, 29th May, 1897; 11th June, 1897; 5th June, 1897; 1st June, 1898; 17th Aug., 1899; all Corvallis (Cordley). Vancouver 16th, 30th May, 1903, ♂'s.

*Bombus Putnami*, Cress., Proc. Acad. Nat. Sci., Phil., 1878, p. 185.

Washington; Mt. Hood, Oregon (Am. Ent. Soc., Phila.).

*Bombus Californicus*, Sm., Cat. Hym. Brit. Mus., ii., 1854, p. 400.

♀'s, 15th, 21st, 23rd, 29th May, 1899; 4th, 10th June, 1898; 18th

Sept., 1899; ♂'s, 20th June, 23rd Sept., 1899; 27th Sept., 3rd Oct., 1899; 7th, 9th Oct., 3rd Nov., all Corvallis. Oregon (Cordley), Mt. Hood, Oregon; Vancouver; Washington (Am. Ent. Soc., Phila.), 28th June, 1902, Vancouver, B. C. (Harvey).

*Bombus Edwardsii*, Cress., Proc. Acad. Nat. Sci. Phil., 1878, p. 184.

Washington; Vancouver; British Columbia; Ft. McLeod, Aug., 1882. (Am. Ent. Soc., Phila.)

*Bombus Americanorum*, Fabr., Syst. Entom., 1775, p. 380.

One ♀ without data, received from Prof. Cordley.

PSITHYRUS, Lep.

*Psithyrus insularis*, Sm.

Head above and dorsum of thorax covered with pale pubescence, which extends down on the pleura. A band of black hairs reaching from wing to wing. Abdomen, in the ♀, black sides of apical half yellow; ♂ with pale pubescence except on apical third, where it is black.

♀ 4th June, 1898, Corvallis (Cordley), with posterior  $\frac{2}{3}$  of dorsum of thorax black; ♀ 1st April, 1902, Vancouver, British Columbia (Harvey); ♂ 28th June, 1902, Vancouver, B. C. (Harvey); ♂ Mt. Cheam, B. C., Aug., 1903 (Harvey).

#### SPINNING METHODS OF TELEA POLYPHEMUS.

In the CANADIAN ENTOMOLOGIST for May, 1903, page 139, Mr. J. W. Cockle, of Kaslo, B. C., stated that he had found a number of cocoons of *T. polyphemus* suspended to the twigs of trees by a silken band, after the manner of *Promethea*, and expressed the view that this peculiarity might only apply to Western America.

He has now sent us a letter from Mr. Edward Denny, of Montreal, who says that he has collected *Polyphemus* cocoons for several years, and has taken as many as 400 in one season; that he has found them lying loose upon the ground, and also as high as fifteen feet from the ground, with the leaf spun firmly to the twig. "The method of attaching the leaf to the twig seems to prevail in this district, 19 out of 20 being of this character, but, strange to say, this year they seem to prefer the grass, or content themselves with spinning their cocoons on the ground."

Mr. Cockle suggests that as "the continuous wet, snow and rain in the west would undoubtedly be detrimental to the life of the pupa if it remained upon the ground all winter, so we find them suspending themselves from the limbs of trees; whereas, in Montreal the extremely hard and cold winter seems to afford a reason why the pupa should have the protection of a heavy covering of snow." [We have never found a *Polyphemus* cocoon suspended by a silken band; when attached to a twig or bough it has always been by the side.—ED. C. E.]

## THREE NEW ICHNEUMON FLIES FROM RUSSIA.

BY WILLIAM H. ASHMEAD, M.A., D.SC, WASHINGTON, D. C.

Mr. Jacob Schreiner, of St. Petersburg, Russia, has been sending me for names some of his rearings of parasitic Hymenoptera, among which are many interesting species.

In his last sending were *three* which are apparently undescribed, and as they are of great economic importance I submit the following descriptions :

Genus PRISTOMERUS, Holmgren.

*Pristomerus Schreineri*, new species. — ♀. Length, 7.8 mm.; ovipositor almost as long as the abdomen. Black, the abdomen with the venter, the dorsal segments 3 to 6, except the third basally, and the legs, including all coxæ, pale ferruginous, the hind tibiæ at apex narrowly fuscous; antennæ black, with the first three joints, except the apex of the third, honey-yellow; wings hyaline, the stigma reddish-brown, the veins blackish, the tegulæ yellowish. The head and thorax are very finely punctate, slightly shining, the metathorax rugulose and distinctly areolated; the abdomen is smooth, but with the first and second segments and the base of the third segment delicately, but distinctly, longitudinally striated.

♂.—Length, 6.5 to 7.5 mm. Agrees well with the female, except that the ventral segments, except the first and the second, the sutures of the following, and the dorsal segments, except the apex of the second, the third entirely, and the fourth and fifth laterally, are black.

Type.—Cat. No. 7778, U. S. N. M.

St. Petersburg, Russia. Described from 1 ♀ and 2 ♂ specimens, bred by Mr. Jacob Schreiner from the larvæ of *Plutella cruciferarum*, Zeller.

Genus TEMELUCHA, Forster.

*Temelucha plutellæ*, new species. — ♀. Length, 7.5 mm.; ovipositor a little shorter than the abdomen. Black, the orbits broadly, the cheeks, the face below the insertion of the antennæ, except the sutures of the clypeus, the scape of the antennæ beneath, the upper margin of the prothorax and the lateral angles to the tegulæ, a **W**-shaped mark on the mesonotum, the scutellum entirely, a broad band and a rounded spot on the mesopleura, a spot back of the insertion of the hind wings, a stripe on the metapleura, a band above this stripe and connected with a transverse band near the apex of the metathorax, yellow; the tegulæ, the front and middle legs, a spot at apex of hind coxæ, and the apex of the hind

trochanters, pale yellowish; the middle and hind coxæ have a black spot at base, the hind legs, except as noted, being ferruginous, the tips of the tibiæ, tips of the first and second joints, and the fifth joint of tarsi, fuscous, the tibial spurs white; the abdomen, except the apex of the first and the second dorsal segments, and some marks on the venter and laterally on segments 3 to 7, is black, the apex of first and second dorsal segments and marks on segments 3 to 7 are ferruginous; the ventral segments 2 and 3, except a quadrate black spot at base of the third, are yellowish-white. Wings hyaline, the stigma and veins rufo-testaceous.

Type.—Cat. No. 7779, U. S. N. M.

St. Petersburg, Russia. Described from a single ♀, bred by Mr. Jacob Schreiner from the larva of *Plutella cruciferarum*, Zeller.

This is the first European species to be described in this genus, although I suspect, just as is the case in America, that other species are described under the genus *Cremastus*.

Genus EPIURUS, Forster.

*Epiurus carpocapsa*, new species.—♀. Length, 6 mm.; ovipositor about 2 mm. Head, the prothorax, except the upper hind angles, and the first abdominal segment towards base, black, rest of thorax and the abdomen rufo-testaceous; antennæ and legs, except as noted, pale ferruginous, the base and apex of hind tibiæ and the tips of the joints of the hind tarsi, black, the rest of the hind tibiæ, between the black annuli at base and apex, and the tarsi, white. Wings hyaline, the stigma and veins reddish-brown.

Type.—Cat. No. 7780, U. S. N. M.

St. Petersburg, Russia. Described from a single ♀, bred by Mr. Jacob Schreiner from *Carpocapsa pomonella*, Linné.

This species is evidently allied to *Pimpla diluta*, Ratzeb., which should be relegated to this genus.

The hosts of these parasites are widely distributed in North America, and do considerable damage, so that these parasites discovered by Mr. Schreiner should be introduced into our fauna to aid in destroying these pests of the cabbage and apple.

#### CORRECTION OF NAME.

Prof. Cockerell writes me that the name *Noctua umbrosa* has been used previously (Newman, British Moths, p. 352), and that my species of that name (CAN. ENT., XXXVI., 31, 1904) will have to be changed. I therefore propose that it be called *perumbrosa*. HARRISON G. DYAR.

## LIFE-HISTORY OF SABULODES ARCASARIA, WLK.

(Sabalodes arcasaria, Wlk., ♂. Sabulodes sulphurata, Pack., ♀.)

BY OTTO SEIFERT, NEW YORK.

On April 24th two ♀ ♀ of this moth were found resting on the ground within a cluster of Sumach-brush, at Woodside, Long Island, N. Y. Their bright yellow colour had faded to pale ochre.

Eggs were deposited from April 24th to 28th, only during the night. According to circumstances they are secreted within the fissures of the leaf-buds and narrow crevices of bark, or into the folds of decaying leaves of the food-plant. In the first case the nearly elliptical eggs are fastened erect, close together, in a single row; when attached to a broader surface they are arranged in small regular patches or rows, but deposited lengthwise, the next one always overlapping the preceding one with its blunt, micropylar end.

At first the eggs are pale grass-green, rather bright, turning soon to brown and bright purplish-brown; towards maturity they contract, forming a shallow cavity on the surface, and revealing the dark-coloured embryo within the colourless membrane.

All the larvæ left their egg-shells by May 9th, collecting gregariously during the daytime on the under side of the leaves, hanging down perpendicularly. The slender, smooth larvæ are purplish-violet to purplish-brown above and below, stigmatal region white. In general they retain this colour to maturity, changing not more than to adapt themselves to the brighter or duller appearance of the maturing or decaying leaflet stems.

The larvæ grow rapidly, moulting during the night; they eat their thrown-off skin, only leaving the covering of anal legs and adjoining parts. Full-grown, they reach a length of 3.5 to 5.0 centim., and attain, by the gradually more pronounced whitish irregular lines and dots upon the dark ground-colour, the appearance of a withered branchlet.

At maturity the larva draws one or more leaves together with the help of a few white silky spinings, and contracting itself considerably, changes within a few hours to a slender, light brownish-yellow or deep tan-coloured, finely-speckled pupa, transforming into imago within two or three weeks.

Eggs deposited April 24th to 28th hatched May 7th to 9th; larvæ pupated from June 2nd to 7th, imagoes appeared from June 17th to 30th. A ♂ and ♀ of this brood were paired; the ♀ deposited eggs to June

28th; eggs hatched July 2nd; larvæ transformed July 24th to 28th; final metamorphosis Aug. 7th to 19th.

Near New York City probably three broods during a season are the rule for this species; of the last generation apparently only the gravid ♀ ♀ hibernate; since more ♀ ♀ of faded appearance, and almost destitute of eggs, were taken during the first days of May within the Sumach-brush, on the hills near Patterson, N. J. Of the European Geometridæ only  $\frac{1}{2}$  p.c. hibernate in the imago state (Wernsburg).

The preferred food-plant seems to be *Rhus glabra*, though the larvæ also feed on *Rhus hirta* and *R. copallina*, with the changeable leaves of which the bright colours of the moth perfectly harmonize; these often rest in the manner of butterflies, with the wings meeting perpendicularly over the back.

All the ♂ ♂ of the two broods were *Sabulodes arcasaria*, Wlk., and all the ♀ ♀ *S. sulphurata*, Pack., with no intermediate forms.

The description of ♂ and ♀ in Packard's Monograph is exhaustive, and it may only be added that the first generation of the ♂ ♂ has the yellow basal part of the wings often very prominently variegated by brown irrorations, the basal line becoming very conspicuous; while the July brood has the yellow space mostly plain, even the basal line being often wanting. The extension of the brown outer part of the wings is variable, often covering, especially on secondaries, the larger part of the wings. With many specimens the brown is more or less clouded by yellow towards the basal part.

The ♀ ♀ seem less inclined to variation, but with a few the whole space beyond the indicated outer line is of a delicate pale ochre.

The difference in size is very considerable, as might be expected from the appearance of the mature larvæ; the specimens measure across the wings: ♂ ♂ from 3.0 to 3.9 centim.; ♀ ♀ from 3.3 to 4.49 cen.

The eggs are nearly elliptical, finely punctured except the smooth, more rounded micropylar end, which is ornamented with rather large, elongated cells. Longest diameter 0.65 millim.

The newly-hatched larvæ are very slender, cylindrical and smooth to longitudinal fold, only first segment slightly enlarged. The head at this stage is considerably wider than the body, rounded above, flat in front, not specialized, rather smooth, of a deep tan colour, with darker ocelli.



Dorsal, lateral and ventral region purplish-violet to purplish-brown; stig-matal area white; warts very minute, with blackish points emitting a single short black hair.

The changes the larvæ gradually undergo up to their last stage are rather limited; their skin turns wrinkled by numerous transverse folds, the whole stig-matal area gets greatly reduced and obscured by many irregular purplish-brown length-lines. The head and first segment become adjusted to nearly the same width, though they are perceptibly narrower than second somite, from which the body slowly gains towards the last two segments, which appear abruptly widened.

The majority of the full-grown larvæ measured 4.5 centim., width of head 2.15 millim.; they are widest at the last four somites, where they measure about  $\frac{1}{2}$  centim., tapering gradually towards second somite. The head and first segment are of almost the same width, and rather abruptly set off, anal legs very much developed, and provided with moderately long spurs, which bear a single short bristle.

Head nearly smooth, rounded above, flat in front, of the same light brown colour as cervical shield, whose dark brown lateral bands extend over the cheeks, terminating wedge-like near the white-tipped antennæ.

From second to last somite the colour of the larvæ is almost uniformly purplish-brown, variegated by fine, often interrupted, whitish lines and irrorations, which are most prominent on posterior part of somites. Fourth and fifth segments have anteriorly a black patch, extending from longitudinal fold to lateral space. Ventrally the whitish lines and irrorations mostly prevail, giving this area often a nearly grayish appearance.

Tubercles small, dark brown, conical, pointed, with a short single hair; wart ii. more developed on 7th and 8th somite, but not exceeding in height 0.5 mm.

On second segment the prominent longitudinal fold has the tubercles within its sphere enlarged and rounded, thus obtaining almost the appearance of an excrescence.

The slender pupæ vary considerably in size and colour, measuring from the slightly protruding head to cremaster from 1.5 to 2.0 centim., width of 5th abdominal somite from 5.5 to 7.5 mm. They are finely but very profusely, granular and wrinkled, especially the wing-covers, thorax and sheaths of limbs. The strong, rugose, flat and pointed cremaster ends with two slender hooks and six smaller capitate ones at the edges.

The colour of the pupæ varies from tan colour to a warm light brownish-yellow, sprinkled with numerous blackish atoms; wing-covers, thorax and limbs of slightly paler colour than abdomen. Stigmata brown, also the tubercles of the larva indicated by larger brown dots. An often obscured or obsolete blackish stripe at the middle of abdomen above and below.

### TORYMUS THOMSONI, N. SP.

BY REV. THOMAS W. FYLES, LEVIS, QUEBEC.

In the first week of July my attention was drawn by my friend, Mr. Joshua Thomson, of Levis, to a strange sight. The plum trees in his grounds were infested with myriads of a new species of *Torymus*, as many as thirty of the insects appearing on one plum. I never witnessed anything in my entomological pursuits more remarkable. The brilliant little creatures could be seen in the act of depositing their eggs; their ovipositors thrust deep into the fruit. Some of the plums attacked showed signs of a previous attack of the *Curculio*, but most of them did not. Whether the larvæ of the species feed on the flesh and juices of the plum or attack the grubs of the *Curculio*, I cannot say, for I was unable to follow the life-history of the species. The following is a description of the fly:

Body a brilliant metallic green. Thorax punctate; prothorax rounded; metathorax large and elevated; scutellum arched. Trochanters and femora of the same colour as the body, the rest of the legs cerate; tibiæ spurred; tarsi five-jointed, the two last joints somewhat darkened. The antennæ brown, clavate; scape rather long; club three-jointed. Eyes oval, large and full, of a warm purple, with a pale rim, and set with short hairs; ocelli purple. Wings with short ciliæ, iridescent; vein of fore-wing widened where it bends to the costa and for the rest of its length, bristly; the stigmal vein knobbed. Plates above and below the insertion of the wings purple. Ovipositor dark brown, stout, as long as the body. Total length of the insect, 3 mm.

Mr. Ashmead says that the species is "quite different from *T. Sackenii*, or anything else in our collection."

I have sent types of the species to the U. S. National Museum. I may add that all the fruit attacked by the insect fell to the ground. I have named the species after Mr. Thomson, who drew my attention to it.

## A NEW MANTIS OF THE GENUS STAGMATOPTERA FROM NICARAGUA.

BY JAMES A. G. REHN, PHILADELPHIA, PA.

*Stagmatoptera typhon*, n. sp.—Type, ♀; San Marcos, Nicaragua (Baker). Acad. Nat. Sci., Phila.

Allied to *sancta* and *birivia*, Stoll., and *insatiabilis*, Rehn. From the *sancta-insatiabilis* type it differs in the shorter and broader tegmina and wings, the wider and more rotundate expansion of the pronotum, the deeper head and slenderer anterior femora. From the *birivia* type it can easily be distinguished by the extremely short and broad wings and tegmina, the more arcuate expansions and more compressed shaft of the pronotum, as well as the absence of distinct maculations on the tegmina.

Size large; form robust. Head with the anterior aspect trigonal, about three-fourths as deep as broad; superior margin very slightly arcuate; facial shield transverse, almost twice as broad as high; superior margin very obtuse-angulate, the point of the angle depressed; eyes prominent, rounded, sub-pyriform in basal outline; antennæ very small, but slightly more than half the length of pronotum, filiform. Pronotum with the expansion moderately inflated, gradually curving anteriorly to the rather narrowly-rounded anterior margin, curving rather sharply posteriorly to the compressed, trigonal shaft; shaft with the compressed portion about equal to half the entire length of the pronotum, margins slightly expanding posteriorly; posterior margin rounded; median carina distinct on the posterior portion of the shaft, gradually becoming lower anteriorly, until on the collar it is represented by a distinct sulcus; margins of the anterior portion of the dilation with distinct but low teeth, which gradually decrease in size posteriorly, until on the posterior portion of the shaft they are obsolete. Tegmina coriaceous, short and broad, the greatest width being about one-half the length; costal margin straight, except the basal swell and a very slight median sinuosity; posterior margin very broadly and gently arcuate; apex very blunt, broadly rounded, the posterior curve more arcuate than the anterior; costal field broad, equal to one-third the median width of the wing; stigma small, longitudinal, fusiform. Wings very broad, but slightly narrower than long, posterior and apical margins of the wing evenly arcuate, except for a slight emargination separating the radial portion of the wing. Abdomen



## NEW TORTRICIDS FROM KASLO, B. C., AND THE NORTHWEST.

BY W. D. KEARFOTT, MONTCLAIR, N. J.

Through the courtesy of Dr. Harrison G. Dyar I have had the privilege of examining and assisting in the identification of all the specimens of the family *Tortricidae* collected and bred by him and his assistants during the past summer at and in the vicinity of Kaslo, B. C. A complete list of all species will be included in Dr. Dyar's comprehensive paper on his summer's work, which is in course of preparation. All of the species that appear to be unknown are described in the following paper. Prof. C. H. Fernald has very kindly read over the MSS. and examined the types, and confirmed my generic determinations, and in the case of one species made a correction, for all of which I am glad to acknowledge my obligation.

*Cydia arctostaphylana*, sp. nov.—Head, palpi, thorax and fore wings magenta, thickly sprinkled with grey, the latter predominating on inner side of palpi. The grey and magenta scales alternate along inner two-thirds of costa. Cilia of fore wing magenta inwardly margined by a delicate line of grey scales. Hing wing light shining fuscous, cilia same. Under side fore wing dark, smoky fuscous. Six or seven pale spots on costa, in each of which are a pair of dark brown costal spots. Cilia dark shining grey, tips magenta. Under side hind wing dark fuscous, with a row of whitish spots on costa. A small black crescent margining apex, and a series of faint, darker fuscous lines paralleling outer margin on outer half. Cilia light shining grey, inwardly outlined by a row of darker fuscous scales. Abdomen light fuscous, anal tuft tinged with brown; under side darker fuscous, with shades of magenta. Legs grey, outside and tibiae shaded with magenta.

*Var. A.*—Ground colour nearly same as above, but more of a coppery-magenta. Palpi, only magenta on outside, upper edges and inner sides grey. Head grey, with only a trace of magenta. Thorax magenta. Fore wing: grey scales, mixed with black, almost entirely hide the magenta on the dorsal margin; a darker shade in the anal angle, and a narrow band of nearly black scales, sprinkled with grey, outline the cilia along the outer margin before this; at and above anal angle are a few dark brown scales, overlapping the dark line; along the costal are a number of whitish or light grey spots, alternating with dark brown. Cilia dark smoky-grey, sprinkled with a very few light grey specks.

*Var. B.*.—Ground colour same as last two, but the dorsal band of Var. A in Var. B is a broad band, one-third width of wing, of whitish scales, interrupted and mixed with black, the outer and costal margin are the same, but narrower, leaving the ground colour in only the middle of the wing, forming a broad band from base to just before outer margin. Palpi dull black, tips of scales greyish-black, sprinkled with lighter; under side grey. Head dark fuscous, scales very long, projecting well above and in front of eyes in the form of ruffs. Thorax and patagia the same, but more mottled with lighter fuscous shades. Fore wing magenta, well sprinkled with whitish scales, these are more concentrated at outer third, below costa, and at apex shading into and obliterated by whitish and brownish fuscous scales. Costa from base to apex, alternate short patches of blackish-brown and whitish scales; this line is only on costal nervule. Scales on dorsal margin, whitish or very pale grey, forming a band extending upwards one-third width of wing; upper margin irregular, well defined and not gradually shading into ground colour. A conspicuous dark brown spot at inner and outer third on upper edge of this band, and a number of small spots of same colour touching dorsum, and three small patches between the inner large patch and base; other small patches of dark brown occur, making it appear mottled. Before outer margin ground colour shades into light grey and fuscous, the latter forming a narrow line, succeeded by a paler one, and beyond this another dark line just before cilia. The latter is dark fuscous, mottled with lighter dots, and at anal angle pale fuscous.

Described from 13 specimens. Seven nearly immaculate, and three each like varieties A and B. Alar Exp., 17 to 18 mm.

Bred by Dr. Dyar, Kaslo, B. C., on *Arctostaphyla* sp., and collected Platte Canon, Col., Aug. 24 to Sept. 11. U. S. Nat. Mus., Type No. 7786.

*Cydia pseudotsugana*, sp. nov.—Head fawn colour, the scales standing separately, and giving speckled appearance, by darker shades at their bases; face darker. Palpi, fawn colour inside and at base outside, shading into dark brown; terminal joint bare, projecting its full length beyond tuft of second joint, blackish-brown, a dot of fawn on extreme tip. Thorax and patagia same as head, very dark brown beneath, irrorated with fawn-colour tips of scales. Fore wing, shades of whitish grey, fuscous and black. The basal patch occupies a little more than one-third the length of wing on the median line, angling sharply inwards to costa and dorsal margin, both of which it reaches at the inner fourth. Ground



colour greyish white, almost evenly spread dark brown and black, the dark colour is concentrated in three dots on fold, the middle one extending in a line nearly to dorsum, and beyond these a dark oblique line, defining the basal patch to median line, thence abruptly angling inward nearly to, but not reaching, dorsum. A small dark dot on costa between this line and base; on lower half are scattered light brown scales. A dark broad band begins on costa, just beyond middle, as a small dot, but broadens just below costa and ends on dorsum before anal angle. The inner and outer edges of this band are irregular, with three distinct rounded projections on the outer and the same number of rectangular projections on the inner edges. Scattered over this band are a few whitish and reddish-brown scales, the former predominating above and the latter beneath the median line. Between this band and the basal patch the colour is more whitish than basal patch, appearing as a paler band, interrupted by a concentration of dark scales, forming a short horizontal line about a third below the costa, and a dark dash on costa in centre of light area; a broader band of darker scales begins about median line and proceeds obliquely inwards towards, but not quite reaching, costa. The lower half of this light area is a conspicuous patch of almost white scales, in the centre of which is a small patch of light brown. Beyond the central dark fascia the ground colour as light as between basal patch and dark fascia; a conspicuous rounded subapical patch of dark scales defines the pale area and causes the latter to appear as a whitish band from costa to anal angle. On the costa are four evenly-spaced dark dots, the inner in the centre of the whitish fascia, the outer on the apex, and the one before the apical spot is confluent with the subapical dark patch. On both the pale area and dark patches are scattered light brown scales; a line of almost black scales precedes the dark lead-coloured cilia. Hind wing smoky-fuscous, under side same, but darker on fore wing, the costa of latter marked with geminate whitish dots, continuing over from the upper side. Abdomen grey, paler beneath; legs same as under side of abdomen, shaded with fuscous and annulated with dark brown. In some specimens the light brown scales are missing, this may be due to rubbing, as these scales seem to be longer and less firmly rooted, but they are not long or erect enough to be classed as raised scales. Alar Exp., 17 mm.

Twenty-three specimens, collected by Dr. Dyar at Kaslo and Kokanee Mt., and taken torpid on the snow of Kitchener Glacier about

Aug. 10; also bred by him from larvæ taken June 24 on *Pseudotsuga* sp.  
U. S. Nat. Mus. Type No. 7788.

*Proteopteryx Columbia*, sp. nov.—Head clothed with long brown scales. Palpi same colour, paler beneath and inside, point of apical joint fuscous, scarcely projecting beyond tuft of second joint. Thorax, closely appressed smoky-black scales, very minutely sprinkled with brown. Patagia same, tips of scales light fuscous. Fore wing, greyish fuscous, marked with black streaks and dots and heavily overlaid, especially on lower half, with reddish-brown scales of several shades. Basal patch not distinctly defined, costal fold one-quarter length of wing, mottled grey, black and pale reddish-brown. Beyond fold on costa are five large oblique dashes, between each is a smaller dot, all black, but bordered by bright reddish-brown scales, between these dots and dashes the scales are nearly white, the outer dash is on the apex; below the third and fourth dashes is an irregular short horizontal black streak, divided into two fine lines at its outer end by a concentration of bright reddish-brown scales, the latter scales form a 2-shaped mark, with the upper edge of the rounded part bordering the black streak, the upper point running into outer margin and the lower point nearly to anal angle. A larger, somewhat oblique horizontal streak begins just beyond middle of wing, and ends beyond end of cell, a few reddish-brown scales are sprinkled over it, below it and reaching to dorsal margin is a large, roughly-triangular patch of mixed pale brown and reddish brown; this colour continues on dorsum to anal angle, but before reaching it and defining an ocellic spot the brown scales project upwards and merge into a small black dentate streak. The scales on the outer half of wing, between these black and brown patches, have a very pale bluish-white appearance. The lower and inner quarter of wing is heavily overlaid with brown scales, a shade darker than the brown dorsal patch, into which they merge. The extreme dorsal margin is dotted with black. There is a broad outer marginal line of evenly-mixed fuscous, gray and brown scales, this line bends sharply outwards above the marginal notch, which is opposite 3, 4 and 5. Cilia brownish-fuscous, long, a few long scales of black at lower end, inside anal angle. Hind wing smoky fuscous, darkest on apex. Cilia a shade lighter, under side same, but slightly paler. Under side fore wing dark smoky fuscous, darkest at apex, five white dots on costa, each enclosing a smaller black dot. Abdomen grey, anal tuft light brown. Legs light grey, tinged with pale brown.

In another specimen the pattern is the same as the above, but the ground colour is more uniformly a bright or steely grey; the brown scales are nearly entirely absent, and the clothing of the head and palpi is almost white, but faintly tinged with yellowish-brown or very pale fawn. On the thorax of this specimen are three small pure white dots, one on each side, the result of the extreme ends of the scales of the patagia being white, and one on posterior edge, caused by the tips of the thoracic scales, which partly overlap first abdominal segment, being white.

In another specimen the reddish-brown scales cover nearly all of the lower half of the fore wing, and in other specimens these scales are coppery-brown, and in others pale brown or fawn colour. The species seems to be quite variable, but a fairly constant characteristic of all that I group under the name *Columbia* is the pair of black patches on the outer half of fore wing, one before apex, parallel to and just below costa, and a larger one also parallel to costa, but on a lower level, covering end of cell. These two streaks, with the smaller one on the apex, make three steps, each nearly an equal height above the other.

Besides the above there are two very differently marked varieties which show no intergrades, and are entitled to varietal names; they may possibly be distinct species, as Dr. Dyar's breeding records of this group are not entirely satisfactory to him.

*Proteopteryx Columbia*, var. *albidorsana*, var. nov.—Head well clothed with long smoky-black scales. Palpi fawn colour, speckled with blackish, the latter predominating on end of tuft, and paler fawn on inside. Thorax black, with a few very minute brown specks. Fore wing dark chocolate-brown; basal patch smoky-black, about half length of costal fold, convex outwardly. On the dorsum, defined on the inside by the basal patch, is a broad white band, the upper edge is excavated deeply just beyond its inner end by the ground colour, beyond this it extends upwards to a sharp point at about the middle of the cell, thence curving downward and again upward, terminating in a sharp point on middle of wing, just beyond end of cell; the ground colour below this forms a triangular patch on dorsum, just before anal ocellic spot, the base of the triangle rests on dorsal margin at and before anal angle, but leaves margin and indents white area, causing the latter to terminate outwardly in two points. The ocellic spot is a hemispherical patch of these same white scales, but a shade less white.

In other specimens the white dorsal area is replaced by fawn-coloured scales. On the costa, beyond the fold, are five pairs of greyish-blue

oblique streaks, lightest on the costa. A streak of black begins on apex, and proceeds parallel to costa to about middle of cell, interrupted at half its length. An obscurely black streak on median line, between basal patch and inner third, a few black scales overlaying white patch on dorsal margin before inner third. Outer margin and cilia dark fuscous, a black dash in cilia just below apex. Hind wing dark smoky-brown, cilia darker. Under side fore wing dark smoky-brown, cilia lighter; five geminate whitish spots on costa. Under side hind wing and cilia fuscous. Abdomen, upper side same as thorax, black, with a few very minute brown specks, anal tuft purplish brown. On the second or third abdominal segment is a flattened tuft of long scales. Under side of abdomen and legs light fuscous, latter annulated with black and speckled, same as upper side of abdomen and thorax.

*Protopteryx Columbia*, var. *mediostriana*, var. nov.—Head brown, mixed with lighter and darker scales, mottled. Palpi mottled-brown outside, nearly white on inside and apex. Thorax smoky-black, very minutely speckled with brown; patagia with white spot on posterior end. Fore wing, ground colour very uniformly mottled bluish-grey, fuscous and black scales, with a few brown scales in patches and streaks. Beginning at base on median line and extending to outer margin just above anal angle is a pinkish fawn-coloured streak, slightly wider at outer end; a second streak of this same colour begins at base, but only extends to inner third, below and parallel to the long one, they are joined together at base. A number of geminate whitish dots on costa. Hind wing smoky fuscous, cilia fuscous. Under side, fore wing smoky fuscous, with geminate whitish dots repeated on costa. Hind wing fuscous, darker before apex. Abdomen very dark fuscous; under side paler. Legs fuscous.

Described from about 60 specimens, of which ten per cent. are var. *albidorsana* and the same number var. *mediostriana*. Bred by Dr. Dyar, Kaslo, B. C., on willow (?), and collected by Dr. Taylor, Wellington and Vancouver, B. C., and by Mr. Bryant, Wellington, B. C., latter part of February to latter part of March. U. S. Nat. Mus. Type Nos. 7789, 7790 and 7791, respectively.

This species is nearest to the European *Protopteryx crenana*, Hbn., inasmuch as both are extremely variable; all of the British Columbian specimens are larger than *crenana*, the general colour of the latter is brighter and less sombre, and the hind wings of *crenana* decidedly lighter. I have no knowledge of the variety *mediostriana* occurring at all in Europe.

Named in honour of the earnest and hard-working Entomologists of the British Columbia district.

(To be continued.)

## NOTES ON THE EARLY STAGES OF CATOCALÆ.

BY G. M. AND E. A. DODGE, LOUISIANA, MO.

*Catocala obscura*, Strecker.—Larvæ taken under hickory bark. Food-plant hickory. Described June 1st, 1903.

General colour, gray with pale brown and black markings.

No transverse band and no elevation of eighth segment.

Head broad as first segment, flattened, gray, with a black dash on each cheek, extending from mouth two-thirds of the way to top of head, and ending in a point.

Tubercles white, but not prominent; the dorsal tubercles being in a brownish stripe that is fairly distinct the entire length.

There are a few black spots along the outer edge of this stripe sometimes extended as short lines; and on the posterior part of the fourth and fifth rings shading inwardly and forming small triangular patches at the inner boundary of the stripe. The dorsum is gray with a faint central line. The gray portion has a wavy outline, forming somewhat oval patches, most conspicuous between the segments.

There is a narrow brown stigmatal stripe, distinct and of even width throughout. Stigmata black and in the lower edge of this stripe. No filaments. The eleventh ring is slightly raised and marked with black posteriorly. Venter greenish, with central spots on segments four, five, six, seven, ten and eleven. Legs pale.

In the CANADIAN ENTOMOLOGIST, Vol. XXXIII., page 225, we described the larva of a *Catocala*, determined by us as *C. Obscura*, Strk. This, however, was the form having dark fringe on the posteriors, and which is properly known as *C. residua*, Grt.

It is not uncommon to find this dark-fringed form under the name *obscura* in collections, and this error will be confirmed and more widely diffused through the publication of Dr. Holland's Moth Book, in which the same mistake is made.

The following extract from our description above referred to is given for comparison.

"Colour dusky gray. Head broad, but not high, whitish, with pale brown markings and a small, ill-defined black blotch at corners of mouth.

"The dorsal stripe is interrupted on fourth to ninth segments, inclusive, by black curved patches that occupy the space between the dorsal tubercles, and opening backward enclose white, cone-shaped patches, apex forward and truncate behind."

It will be seen that in the ornamentation of the dorsal region the two forms differ materially.

Of greater importance is the fact that while the larvæ that in 1901 produced *residua* had "a small, ill-defined black blotch at corners of mouth," those that in 1903 gave *obscura* had "a black acuminate dash, extending from the mouth two-thirds of the way to top of head."

These descriptions were taken from several larvæ in both instances, and the differences here recorded would indicate that the two forms should be classed as distinct species.

Colour variations in *Catocala* larvæ are frequent, and have no connection with the variations of the imago. But the pattern of the dorsum and the black marks of the cheeks are constant, and are good specific characters.

Described as a distinct species, the catalogue makers, with no better guide than a comparison of cabinet specimens, listed *residua* as var. "a" of *obscura*, thus assuming a knowledge that they did not possess, and thereby misleading all who were depending upon such lists for aid in arranging their collections.

Prof. Smith states in the preface to his new Check List that "all species and genera are treated as presumably good, *unless the contrary has been established*." But *residua* is still var. "a" of *obscura* in his list. It would be interesting to learn who *established* the identity of these two forms, and just how it was done.

*Catocala Whitneyi* furnishes another case in point.

Soon after its description it was denied specific value, and became var. "a" of *abbreviatella*. It so appears in Smith's List, both the old and new editions.

This error is also given especial prominence in the "Moth Book," where the two forms are shown side by side.

Their likeness, together with the author's expressed opinion that they are forms of one species, will undoubtedly be taken as proof indisputable of their identity by the majority of readers.

At our former home in Nebraska we used to take a few *abbreviatella* every year. We noted that they invariably began to appear from one week to two weeks earlier than *Whitneyi*. When the latter was fresh and coming to bait nightly in considerable numbers, specimens of the former in a more or less worn and faded condition were to be encountered.



Manifestly if one was a variety of the other there should be no difference in the season of appearing.

The late Judge Truman, of South Dakota, took both species at Volga. He was satisfied that they were distinct, and gave the same reasons as cited above for his belief.

Here at Louisiana we take a few *abbreviatella* nearly every year, but have found no *Whitneyi*.

In the large number of specimens of both forms that we have taken during the last twenty years or more we have never found an intergrade, nor have we observed any variation of either form toward the other.

Nothing short of breeding one or both in confinement can definitely settle the question and prove or disprove their identity.

But if we array the facts as above stated against the bare assertion that "they look somewhat alike," the preponderance of proof seems to favor the contention that they are distinct.

If anyone has *established* the identity of these two forms we have overlooked it.

Prof. French, in his revision of the Catocalæ, published in this journal, rated both *residua* and *Whitneyi* as species, and they so appear in Dyar's Catalogue, which adopts his classification.

But Prof. French carefully consulted every available source of information before passing upon the validity of a species. As the years go by the intrinsic value of his work will be made manifest.

#### SOME NEW SPECIES OF PARASITIC HYMENOPTERA.

BY CHARLES T. BRUES, AMERICAN MUSEUM OF NATURAL HISTORY,  
NEW YORK CITY.

*Dryinus nigrellus*, sp. nov.—Female. Length 4.25 mm. Wholly black, except tarsi, part of antennæ and mandibles. Head black, finely rugulose, faintly silvery pubescent and sub-shining. Vertex impressed; front with a short median impressed groove above the antennæ. Cheeks roughened; mandibles pale yellow, with the tip of the teeth black; quadridentate, the outer tooth the larger and the inner one extremely minute; palpi black. Antennæ filiform, reaching to the base of the abdomen, ten-jointed; first three joints and base of fourth rufous, remainder black, except the last, which is pale yellow. Scape stout, slightly over twice as long as the pedicel; first flagellar joint twice as long as the scape, remaining joints decreasing in length, except the last, which is one and

one-half times as long as the penultimate. Pronotum ovoid, finely rugulose, with a transverse depression at anterior third; behind this very sharply convex; two and one-half times as long as the mesonotum and one-half as wide as the head. Mesonotum more coarsely sculptured than the pronotum, twice as wide as long, tegulæ piceous; scutellum large, finely rugulose, with a punctate frenum anteriorly. Metanotum slightly longer than the pronotum, rounded behind; rather finely and evenly longitudinally rugoso-aciculate. Abdomen ovate, black, highly polished, extreme tip rufous. Petiole shorter than the hind coxa; second, third and fourth segments about equal, the fifth somewhat longer. Legs piceous black, the swollen femora below and the knees reddish. Anterior tibiae and their metatarsi fuscous, the tarsi chelate, rufous; four posterior tarsi pale yellow. Wings hyaline, marked with two fuscous spots; the first fills out the two basal cells, except their extreme bases, and the second covers the stigma and stigmatal vein, fading out posteriorly. Basal cells very distinct, marginal cell not complete; stigma of moderate size.

Described from a single female specimen collected at Parkville, Long Island, by Mr. Wm. Beutenmuller. Type in the collection of the American Museum of Natural History.

This species can be most readily recognized by its very dark coloration.

*Bocchus atriceps*, sp. nov.—Female. Length, 5 mm. Rufous, head and posterior portion of abdomen black. Head black, shining; rufous below the base of the antennæ; front coarsely rugulosely punctate above, below irregularly longitudinally striate: occiput margined; cheeks finely punctate and clothed with delicate white hairs; mandibles light yellow; maxillary palpi four-jointed, fuscous, joints nearly equal. Antennæ slender, reaching to the base of the hind coxæ; ten-jointed; four basal joints rufous, others black; scape short, stout, a little longer than the slender pedicel; both together equal to the long, slender first flagellar joint; second flagellar joint two-thirds as long as the first; others slightly decreasing in length to apex. Prothorax half as wide as head, a little longer than wide, constricted just before the apex; rufous, white pubescent on the sides. Mesonotum distinctly shorter than the pronotum, the two furrows deep; surface shining, rufous medially, fuscous on the sides. Scutellum semi-circular, separated from the mesonotum and post-scutellum by transverse furrows. Metathorax short, rounded behind, coarsely reticulate; rufous, except the anterior edge, which is black.

Abdomen ovate, polished, short petiolate, black, except the greater part of the first segment and the extreme tip, which are black; second, third and fourth segments sub-equal in length. Legs rufous, the tarsi lighter; femora, especially the anterior pair, very stout; anterior tarsi chelate, first joint long; anterior femora with a black mark below at the base, tips of posterior femora and tibiae also black. Wings hyaline, with a fuscous band just beyond the stigma, also a faint fuscous spot at the apex of the second basal cell, stigma lanceolate.

Described from a single female specimen collected at Mosholu, N.Y., July 25, 1903, by Mr. J. R. de la Torre Bueno.

This species may be distinguished from the only other described species of *Bocchus* (*B. flavicollis*, Ashm.) by its colour, larger size, different length of abdominal segments and configuration of the antennae. It agrees very well with the generic diagnosis given by Ashmead (Monog. Proctotrypidæ, p. 91).

*Oxylabis bifoveolatus*, sp. nov.—Male. Length, 3 mm. Black; legs fuscous, varied with rufous. Head shining black, rugulose on the occiput, with a short impressed longitudinal line above the ocelli; head margined behind; cheeks shagreened; mandibles dark fuscous. Antennae 14-jointed, distinctly longer than the body, tapering toward the tips; two basal joints black, the rest fuscous. Scape very short, twice as long as the pedicel, which is less than one-half as long as the first flagellar joint; first eleven flagellar joints of equal length, the last one and one-half times as long as the preceding and more slender. Sides of the pronotum coarsely and obliquely striate. Mesonotum with two deep furrows, less pronounced anteriorly, and with a triangular fovea just before the scutellum. Scutellum with two deep foveæ. Post-scutellum with a median groove and a more delicate one on each side; its tip produced into a long, acute black spine, which is perpendicular to the posterior face of the metathorax. Metanotum anteriorly coarsely rugose-striate, at the middle with a widely-interrupted transverse furrow, behind this with a fovea on each side, and medially at the tip with a large enclosed space. Petiole on abdomen suddenly constricted in front, a little wider than long and coarsely fluted. Remainder of abdomen compressed and very shining, impunctate; second segment very long, others short. Legs fuscous; front tibiae, knees and bases of the tarsi lighter. Wings

hyaline, basal and marginal cells complete; the latter completely closed, one and one-half times as long as high, and with the stump of a vein at its lower angle.

Described from a single specimen from Snake Hill, New Jersey; collected in June by Mr. Wm. Beutenmuller. Type in the collection of the American Museum of Natural History.

This species can be easily distinguished from *O. spinosus*, Ashm., the only other described North American species, by its bifoveate scutellum, and straight, black, post-scutellar spine.

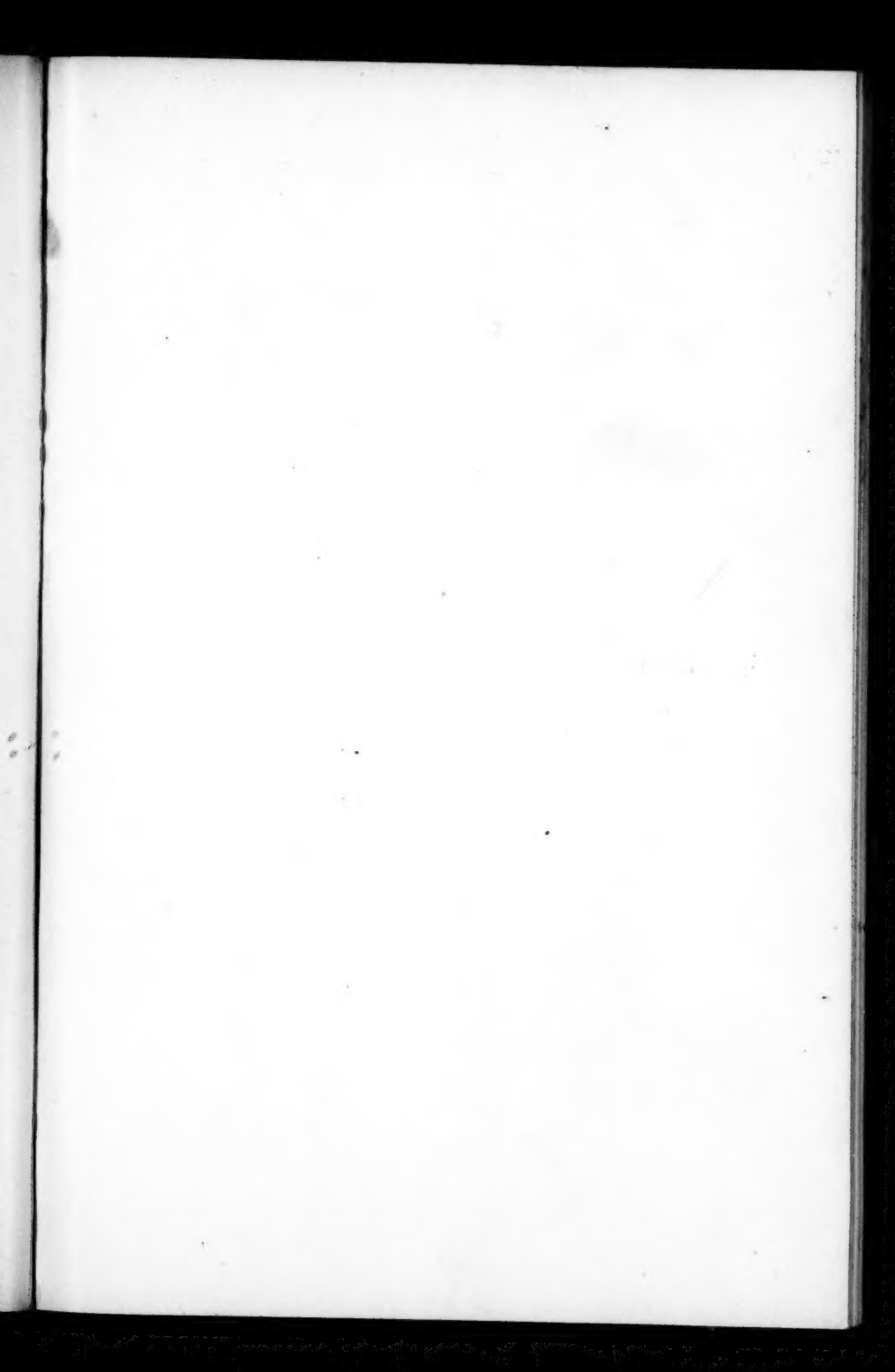
### ON THE GENUS PROTEOPTERYX.

BY PROF. C. H. FERNALD, AMHERST, MASS.

This genus was established by Lord Walsingham in Illustrations of Typical Specimens of Lepidoptera Heterocera in the collection of the British Museum, Part IV., North American Tortricidæ, p. 68 (1879), with *emarginana*, Wlsm., the only species under it. This variable species was taken in Mendocino and Lake Counties, California, in considerable numbers (about 40 specimens) in June, 1871, and five varieties were described. His Lordship had the great kindness to give me several examples representing the different varieties.

The generic characters, as given in the original description, need some revision, which the author would doubtless have given before this time if he had had occasion to review the genus. There is a costal fold in the three male specimens of this species in my collection, which character the author overlooked, as it is generally so closely pressed to the surface of the wing as to be scarcely visible, but in one of my specimens the fold on one wing is turned up sufficiently to expose the usual pencil of long hairs. Veins 7 and 8 of the fore wings are said to be "scarcely separate at their origin," which is true in my examples of this species, but in some allied species belonging to this genus these veins arise near each other, or are connate, or stalked, or sometimes connate in one wing and stalked in the other of the same specimen. Vein 5 in the hind wing is bent down, and has its origin near that of the stem of 3 and 4, which are stalked. The European species, *crenana*, Hub., belongs to this genus.

Mailed April 6th, 1904.





LYCÆNA PSEUDARGIOLUS  
 VAR. NIGRESCENS ♂  
 THECLA STRIGOSA  
 VAR. LIPAROPS  
 PHYCIODES HANHAMII  
 LYCÆNA PSEUDARGIOLUS  
 VAR. ARGENTATA ♂  
 VAR. ARGENTATA ♂ (UNDERSIDE)

LYCÆNA PSEUDARGIOLUS  
 VAR. NIGRESCENS ♀  
 THECLA STRIGOSA  
 VAR. LIPAROPS (UNDERSIDE)  
 PHYCIODES HANHAMII ♀  
 THECLA HEATHII ♂ (UNDERSIDE)  
 LYCÆNA PSEUDARGIOLUS  
 VAR. ARGENTATA ♀